

Animal Care Committee review of California sea lion B198 mortality during health screening

B198 was captured at Bonneville Dam on 28 April and brought to Point Defiance Zoo and Aquarium for health screening and preparation for transfer to an oceanarium. The health screen was conducted on 29 April. The animal was sedated with midazolam at an estimated dose of 0.15 mg/kg, given by intramuscular injection and then anesthetized with isoflurane gas via face mask. During anesthesia it experienced respiratory distress and stopped breathing. Resuscitation attempts were unsuccessful, but included intubation and administration of dopram, a respiratory stimulant drug. A necropsy was conducted on the evening of 29 April and tissues were collected and preserved per established marine mammal necropsy protocols for histological examination. The animal care committee convened a meeting by conference call at 1100 hrs on 2 May 2008 to review hematology data, necropsy results and anesthesiology.

The animal was exceptionally large, weighing 660 kg (1,452 pounds). Although there was concern about handling an animal so large we have never lost an adult male during anesthesia since we began the procedures over 10 years ago. We drew blood samples from the caudal gluteal vein and obtained urine samples via catheterization of the urinary bladder and harvested biopsy samples from lesions on the penis and prepuce of the animal.

The hematology data yielded only two values which were different from the other 9 Columbia River sea lions that have received a health screen at Point Defiance Zoo and Aquarium. The white blood cell count (WBC) was low (5.54 k/ul) but within the range of normal WBC values for California sea lions sampled in Oregon and Washington (4.5 – 12.3 k/ul). Carbon dioxide levels in the blood were elevated (35meq/l) over the other 9 animals sampled (25-33 meq/l). Taken separately they do not mean a great deal. The decreased WBC can be indicative of viral infection and the elevated carbon dioxide level may have resulted from a decreased respiratory rate and effort.

The necropsy results indicated the animal was exceptionally fat, having 120 mm of ventral blubber over the sternum, extensive deposits of fat in the peritoneal and thoracic cavity and among the organ systems. There were minor healed lesions on the margins of the liver, some of which were just on the surface and some which involved tissues deeper (2-5 mm) in the liver. There was a single fluid filled cyst exposed on the surface of the right kidney, but the remainder of the organ tissues appeared normal. A significant set of lesions were found in the urogenital system. There were large plaque—like lesions on the penis and many small blister-like lesions on the prepuce. These lesions are consistent with gamma herpes virus infections which are associated with urogenital cancer in California sea lions.

Tissues from all major organs were collected for histological examination. Those tissues are now fixed and will be sent to a wildlife pathologist for processing and review. Biopsy samples of the urogenital lesions are to be tested for presence of the herpes virus

using PCR at UC Davis. The results from both analyses will confirm the presence of the gamma herpes virus and whether the lesions were cancerous or precancerous.

The anesthesia records for the 10 animals handled at PDZA indicate that the duration of anesthesia ranged from 15 to 52 minutes. The longest duration of anesthesia was that of B198 (at 52 minutes) which resulted in mortality.

There was considerable discussion of the prevalence gamma herpes virus and associated cancer in wild California sea lions. Due to the high probability that genital lesions in sea lions are neoplastic and may metastasize leading to death, it was decided that adult males with urogenital lesions should not be transferred to zoos and oceanaria but rather should be humanely euthanized.

Findings:

The ACC concluded that the death of the animal resulted from a combination of the very large size of the individual and the duration of the anesthesia. It was decided that limiting the duration of anesthesia depending upon the size of the animal should decrease the probability of mortality of adult male California sea lions in the future.

The ACC concluded that it is highly probably that B198 was in a diseased state, having a urogenital carcinoma which has been reported as a cause of mortality in many wild California sea lions. The diseased condition of the animal probably did not contribute to its mortality during anesthesia.

Recommendations:

The ACC recognizes and accepts that there are inherent risks of injury or mortality to individual wild animals anytime they are captured, handled, or anesthetized, and that it is our duty to learn from each incident and take whatever measures necessary to reduce risk to the animals. After reviewing our handling and anesthesia protocols we make the following recommendations:

That we limit the duration of gas anesthesia to 30 minutes for animals weighing less than 454 kg (1000 pounds), and that for animals weighing greater than 454 kg (1000 pounds) that the duration of gas anesthesia be limited to 20 minutes.

Animals found to have urogenital lesions consistent with neoplasia, should not be transferred to zoos or oceanaria, but instead should be humanely euthanized. In the event that euthanasia is not an option, then these diseased animals should be released back into the wild.

Animal Care Committee (Only 2 members J. Gaydos and D. Conroy were not available for the 2 May meeting)

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